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ABSTRACT

New social studies materials are based on inquiry modes of learning and teaching; however, little is known as to what students actually learn from an inquiry model (except for cognitive knowledge). An inquiry model and test to measure the "unmeasurable" in the social studies--namely, a student's ability to use the scientific process, attitudes toward knowledge, and willingness to analyze personal and social values--are presented in this paper. Inquiry as a method of learning includes four types of thinking: 1) social sciencing; 2) critical; 3) intuitive; and 4) creative. In addition, inquiry learning hinges on the attitudinal factor of the student's degree of open- or closed-mindedness. As a teaching paradigm, an inquiry approach can play on the internal or external motivation of the learner. The genuine inquiry approach (open-beginning and open-ended) enhances internal motivation. Inquiry in this model is composed of three higher order factors: 1) source of motivation, 2) type of thinking, and 3) mind set--a degree of open mindedness. A continuum for reflective inquiry extends from cognition to affect, emphasizing its holistic or organismic nature. This model served as the basis for devising an instrument which measured the four types of inquiry thinking. Determination of external and internal motivation, however, still remains "unmeasurable." (Author/SJM)

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MEASURING THE "UNMEASURABLE": AN INQUIRY MODEL AND TEST FOR THE SOCIAL STUDIES

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Since the advent of the new Math, the new Science, the new English, and the new Social Studies, a curriculum developer's nightmare has been how to tell what students learn from these new curriculum materials packages and new teaching strategies. Since virtually all these new curricula are based on an inquiry mode of learning and teaching, the question becomes what do students learn from an inquiry mode? Examining the student objectives of new social studies curricula reveals basically four types of objectives: 1) mastery of updated knowledge derived from the academic disciplines (i.e. concepts and generalizations); 2) facility in the use of science-as-process (i.e. deriving problems from data, formulating hypotheses, seeking and selecting new data, analyzing data, accepting, rejecting or modifying hypotheses, and forming conclusions); 3) attitudes toward knowledge (e.g., "healthy skepticism", "playfulness in manipulating data", and "tentativity of conclusions"); and 4) willingness to analyze personal and social values vis-a-vis public policy issues. Of these four realms of objectives (i.e. knowledge, process, attitudes, and values), the easiest to evaluate in terms of student outcomes is that of mastery of knowledge. Even here, however, existing published tests seldom "tap" the new knowledge in the social sciences. For the other three realms of student objectives, few new social studies projects have attempted to develop tests or other measures to get at these illusory outcomes. One gets the impression that in these realms of student learning, it is hopeless to attempt to measure outcomes -- can one measure the unmeasurable?

A dominant theme in virtually all new social studies projects is the inquiry approach to teaching and learning. Inquiry as both teaching and learning paradigm found its way into social studies education largely through the writings of Dewey[1], Bruner[2], Schwab[3], Fenton[4], Taba[5], Metcalf[6], and

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[1]John Dewey, How We Think, Boston: D.C. Heath and Company, 1933.

[2]Jerome S. Bruner, The Process of Education, New York: Random House, Inc., 1960.

[3]Joseph J. Schwab, "The Concept of the Structure of A Discipline" Educational Record (July, 1962).

[4]Edwin Fenton, The New Social Studies, New York: Holt, Rinehart and Winston, Inc., 1967.

[5]Hilda Taba, Curriculum Development: Theory and Practice, New York: Harcourt, Brace and World, Inc., 1962.

[6]Maurice P. Hunt and Laurence E. Metcalf, Teaching High School Social Studies, New York: Harper and Row Publishers, 1968.

Oliver.[7] This is not to suggest that inquiry learning or teaching are defined the same in all new social studies projects; however, most observers would agree that a general rationale for the New Social Stuides is inquiry.

Inquiry As A Learning Process

As a learning paradigm, inquiry can be viewed from two aspects or dimensions. It is a method of learning whose roots are embedded in rational, scientific investigation. It is also an idiosyncratic and intuitive pursuit of problems within an atmosphere of continuous re-examination of accepted procedures and values. Inquiry thus appears designed to impart both a scientific skill and phenomenologic attitude to the learner. Inquiry as an intellectual learning process has been described in such terms as "social sciencing," and something that has been called "critical thinking."

"Social sciencing" in the social studies has meant bringing to the classroom the social scientist's method of approaching problems and acquiring new knowledge. This is a type of inquiry characterized by the use of accepted data gathering and testing procedures from which rational generalizations may be formed, if only tentatively, en route to subsequent searches for better answers and more knowledge. Schwab has described the structure of a discipline of knowledge as consisting of two parts -- the imposed concepts that define the investigated subject matter thus controlling its inquiries (substantive) and its methods of investigation (syntactical).[8]

The methodology of social sciencing can be described as a composite of the empirical-inductive search for plausible generalizations and the theoretical-deductive process of deriving valid theories.[9] The social sciences in recent years have relied largely on the empirical-inductive, as have the curriculum efforts that emulate the methodology of these disciplines. Social sciencing in the social studies curriculum, however, often has come to mean discovering solutions or arriving at answers previously found by the scholars. The disciplines in effect define the significant problems as well as the modes of inquiry related to these problems.

Another strain of inquiry learning in the history of social studies education is "critical thinking." The Harvard Social Studies Project staff state that learning to think critically means "learning to cut apart the

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[7]Donald Oliver and James P. Shaver, Teaching Public Issues In High School, Boston: Houghton-Mifflin Company, 1966.

[8]Schwab, op.cit., pp. 199, 203.

[9]James B. Conant, Two Modes of Thought, New York: Trident Press, 1964, pp. 68-70.

claims we read and hear everyday to see what is inside."[10] They continue by asserting that learners must examine statements to test the meaning and accuracy of the assumptions underlying them and the evidence supporting them. Their analysis takes the reader into a proof process in which a hypothesis having been formed is tested by the use of pertinent evidence. This suggests that critical thinking is both a probing analytical investigation and a methodological sequence. Ennis defines critical thinking as a "correct assessing of ideas" and subsequently describes its dimensions.[11] Critical thinking is a logical sequential investigation which subsumes several particular skills. These include skills of understanding (i.e. detecting bias, ambiguity and fact from opinion); skills of hypothesizing (i.e. defining problems, perceiving tentative conclusions and forming conclusions); skills of exploration (i.e. identifying assumptions, drawing proper inferences and gathering pertinent data and evidence); and skills of concluding (i.e. testing generalizations and developing solutions).

One dilemma surrounding inquiry learning is similar to that in education-at-large. This is the conflict between the scientific and humanistic schools of thought. These combatants have their distinct points of departure. While the scientific conception stresses the objective and the measurable, the humanists see learning most importantly as idiosyncratic, intuitive and interpretive. If the scientists stress the learner's conceptual or cognitive development, the humanists emphasize the affective development of feelings, emotions, and values.

Opponents of the scientific approach argue it is too mechanistic and manipulative. Opponents of the humanists claim that they are excessively vague, placing too much stock in the judgmental, personal and unquantifiable areas of behavior. In reality, all educators are modifiers of behaviors (i.e. "manipulative"), while affective behaviors are amenable to increasingly more accurate measurement. The science of scientists suggests that inquiry processes are both rational and intuitive; objective and judgmental; analytic and evaluative.[12] A balance is required between the cognitive and affective; to do otherwise would ignore the process of genuine inquiry whether it be in the laboratory, library, repair shop, playground or classroom.

As one response to this dilemma, we propose an expanded notion of inquiry. In addition to social sciencing and critical thinking as aspects of inquiry learning, we would also include two other types of thinking -- "intuitive thinking" and "creative thinking."

As an aspect of inquiry, "intuitive thinking" is quite different from social sciencing and critical thinking. In The Process of Education, Jerome Bruner describes intuition as an intellectual technique of arriving at plausible but tentative formulations without going through the analytic steps

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[10] The Harvard Social Studies Project, Donald W. Oliver, Director, Learning to Think Critically, a paper prepared for the U.S. Office of Education, Department of Health, Education and Welfare, Cooperative Research Project No. 8145, Utah State Board of Education, August, 1967, p.2.

[11] Robert H. Ennis, "A Concept of Critical Thinking," Harvard Educational Review (Winter, 1962), pp. 158-59.

[12] Thomas Kuhn, The Structure of Scientific Revolutions, Chicago: University of Chicago Press, 1970.

of validating conclusions. Intuitive thinking refers to the ability to shape shrewd guesses, to form plausible hypotheses and to draw plausible conclusions; in other words, the production of pertinent hunches and insights.[13] As Bruner pointed out, it would be misleading to think of intuition as mysteriously appearing. Good intuiters may have been born with something special, but sound intuition is nurtured by conducive environments and gains substance when rooted in solid knowledge.[14]

As a component of inquiry, intuitive thinking is a strategic and integral ingredient of hypothesis-testing. Massialas and Zevin remark that in discovery learning the learner grapples with the regularities and irregularities of his socio-political environment by forming hypotheses and structured patterns out of his intuition and related bits of knowledge.[15] Bruner adds that as the discoverer gains proficiency in using his hunches and questions to shape reasonable hypotheses through a controlled, persistent, dogged style, the inspiration of intuition is channeled into locating constraints and relationships evident in the investigation at hand. Bruner calls this combination of insight and rationality "cumulative constructivism."[16]

Crabtree reinforces intuition as a part of the inquiry process when she points out that rationality indeed is called into play whenever systematic observations of data are in order. Nevertheless, before these steps can proceed, the hypothesis directing the inquiry first must have been generated, hunched or intuited.[17]

"Creative thinking," as another aspect of inquiry learning, may be viewed as a free-wheeling, random, display of originality, fluency, nonconformity, and playfulness or it may be viewed as a problem-centered, goal-oriented display of those same qualities. The latter is considerably more appropriate to inquiry learning. Creativity accounts for the imagination, diversity, elaboration and resourcefulness that is necessary for original inquiry.

Writers on creativity have pointed out that not only so-called artists, but scientists, other scholars, and craftsmen proceed from ideas that are sensed rather than comprehended. According to John Dewey,

> Only the psychology that has separated things which in reality belong together holds that scientists and philosophers think while poets and painters follow their feelings. In both, and to the same extent in degree in

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[13] Bruner, The Process of Education, op.cit., pp. 13-14.

[14] Ibid., pp. 56-57.

[15] Byron Massialas and Jack Zevin, "Teaching Social Studies Through Discovery," Social Education (November, 1964), p. 384.

[16] Jerome S. Bruner, "The Act of Discovery," Harvard Educational Review (Winter, 1961), pp. 23-25.

[17] Charlotte Crabtree, "Supporting Reflective Thinking in the Classroom," in Jean Fair and Fannie R. Shaftel (eds.), Effective Thinking in the Social Studies, the 37th Yearbook of the National Council for the Social Studies, 1967, pp. 87-88.

> which they are of comparable rank, there is emotionalized thinking, and there are feelings whose substance consists of appreciated meanings or ideas.[18]

Guilford's work in factor analyzing creative thinking offers an analytical description of the thinking factors involved. By and large these factors fall into what can be called divergent thought patterns. The factors that Guilford has identified include:

1) Ideational fluency -- meaning the ability to call up many ideas in a situation relatively free of restrictions.

2) Associational fluency -- meaning the ability to produce words from a restricted area of meaning.

3) Expressional fluency -- meaning the ability to give up one perceived organization of lines in order to see another.

4) Spontaneous flexibility -- meaning the ability to produce a variety of ideas, visual figures and the like when free to do so.

5) Adaptive flexibility -- meaning the ability to reconstruct a problem or situation when necessary.

6) Elaboration -- meaning the ability to supply details to complete a given outline or skeleton form.

7) Originality -- meaning the ability or disposition to produce uncommon, remotely associated, or clever responses.

8) Sensitivity to problems -- meaning the ability to recognize that a problem does exist.[19]

Inquiry learning, thus, includes at least four types of thinking: 1) social sciencing; 2) critical thinking; 3) intuitive thinking; and 4) creative thinking. As a learning paradigm, however, inquiry also hinges on attitudinal factors. One of these factors is the degree of open- or closed-mindedness. Openness is necessary if social sciencing and critical, intuitive and creative thinking are to be brought to fruition. Rokeach describes the open belief system as one in which the magnitude of rejection of a "disbelief" is relatively low, where beliefs are not isolated but seen in relation to other beliefs and disbeliefs, where the discrepancy of beliefs and disbeliefs is low, and where the differentiation (richness) of disbeliefs is relatively high. In contrast the closed system is dependent more on reinforcement from external authority and by irrelevant internal drives. The holder of a closed belief system sees the world as more threatening, believes more in absolute authority, and evaluates more in terms of what side one lines up on. It follows that the open-minded thinker is more tolerant, flexible, and conformation-

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[18] John Dewey, Art As Experience, New York: Minton, Balch, 1934, p. 73.

[19] J. P. Guilford, "Factors that Aid and Hinder Creativity," in Raymond G. Kuhlen, Studies in Educational Psychology, Toronto: Blaisdell Publishing Company, 1968, pp. 334-341.

seeking; and less evaluative, dogmatic and authoritarian, than his closed counterpart.[20]

Open-mindedness lends certain strategic behaviors to the inquiry process. Among these are the ability to: freely explore ideas and values; display a sensitivity to problems; doubt beliefs; withstand uncertainty (withhold judgment); detect bias and act on empirically derived information.

Inquiry As A Teaching Paradigm

In addition to being a learning paradigm, inquiry is also a pedagogical approach. Inquiry teaching has been described generally as shifting the emphasis from what the student learns to how the student learns. Curriculum innovations in the new social studies have championed conveying to students the methods of social sciencing and critical thinking. Teaching a methodology, however, is no guarantee that students will learn how to learn, or have the desire and willingness to learn. If, in fact, teaching a methodology leads the students to preconceived knowledge, then the emphasis on how to learn falls short of fostering self-motivated and self-directed learning.

Most writers in the social studies suggest that the teacher's task in inquiry is to plan the experience and then guide his student toward meaningful insights by asking questions and putting them in touch with needed data. This is a clear example of directing inquiry learning toward predetermined conclusions. These practices are said to be in keeping with the spirit of scientific inquiry.

Scientific methods have been described by those practicing it quite differently. As Conant indicated in Modern Science and Modern Man, activities of scientists in their laboratories and studies are shot through with values. Scientific theory is not a map or creed for human action; rather it is a guide.[21] Kuhn, The Structure of Scientific Revolution, remarks that conventional methods of science to a large extent define the parameters of an observer's search. New breakthroughs in science have come disproportionately from the young scholars and newcomers in any particular field; that is, from those with more divergent, less structured thought patterns.[22]

Kuhn's work is instructive for pedagogy because it reveals the subjective dimension of scientific inquiry. Scientists do not necessarily proceed by testing hypotheses through logical and rigorous proof. Equally important for

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[20]Milton Rokeach, The Open and Closed Mind, New York: Basic Books, Inc., 1960, pp. 32-35.

[21]James B. Conant, Modern Science and Modern Man, New York: Columbia University Press, 1952.

[22]Kuhn, The Structure of Scientific Revolution, op.cit., pp. 62-65.

scientific change is the leap of faith and commitment according to what feels right, esthetically, intuitively, and holistically. This also suggests that cognitive and affective functioning are inseparable. Kuhn's work makes it clear that scientific theories act not just as patterns of research but also as psychological commitments. Scientific inquiry, as argued, strives to be objective, rational, and value-free, though it also is idiosyncratic, intuitive, and evaluative. Authentic inquiry necessarily is self-motivated and self-directed. This is not the least unscientific.

It is instructive that in a more recent treatment of the nature of inquiry teaching, Beyer emphasizes not only the tentative and changing nature of scientific knowledge, but its interpretativeness (i.e. subjectivity). His model also elicits requisite attitudes and values of inquiry learning which include curiosity, skepticism, a willingness to suspend judgment and tolerance of ambiguity.[23] It follows that inquiry teaching (and learning), if it is to be reflective, must be open-ended and student-motivated as well as analytical and objective. Unfortunately, with many inquiry appraoches in the New Social Studies, the questions raised, problems studied, discoveries and generalizations arrived at are rarely the students'. The methods employed are largely those that the teacher or materials has the student do rather than those that the student initiates and pursues.

It now appears that inquiry is both a learning and a teaching paradigm. As a learning paradigm, inquiry is far more complex than the mastery of a sequential methodology. Inquiry learning in the social studies is composed of at least four types of thinking (i.e. social sciencing, critical thinking, intuitive thinking and creative thinking) and a certain attitude (open-mindedness) toward the approach. As a teaching paradigm, the inquiry approach can play on internal or external motivations of the learner. The teacher, in effect, can choose a "re-discovery" or "re-inquiry" approach which enhances external motivation, or a "genuine" inquiry approach (open-beginning and open-ended) which enhances integral motivation. Our model suggests that as inquiry becomes more reflective (i.e. genuine and open), affective behaviors play a relatively more important role in the process. This does not imply that cognitive behaviors diminish. If anything, higher level cognitive skills such as analyzing and synthesizing increase in magnitude.

Inquiry may be thought of as composed of three related factors. First, we identified the "source of motivation" or the degree to which external motivation or internal motivation affects learner engagement. A second factor is "type of thinking": social sciencing, critical thinking, intuitive

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[23]Barry K. Beyer, Inquiry in the Social Studies Classroom, Columbus, Ohio: Charles E. Merrill Publishing Company, 1971, Ch. 1.

thinking, and creative thinking. The third factor is "mind set" or degree of open- or closed-mindedness.

Each of the three factors in inquiry can be depicted as a continuum:

1. Source of Motivation: External Motivation ——— Internal Motivation

2. Type of Thinking: Social Sciencing ——— Critical Thinking ——— Creative Thinking ——— Intuitive Thinking

3. Mind Set: Closed-Mindedness ——— Open-Mindedness

An overarching continuum for all of inquiry might extend from cognition to affect, emphasizing its holistic or organismic nature. The model suggests an inseparability and coexistence of the two domains of cognition and affect. In reality, cognition and affect operate to some degree in all behaviors, occurring simultaneously in the active learner.

This expanded and more general notion of inquiry, however, is both blessing and burden -- a blessing in that inquiry should be conceived as more than merely a set of procedures; a burden in that the specification of discrete behaviors in a complex model of inquiry is extremely difficult.

Measuring Inquiry Learning

The development of a model of inquiry served as the basis for devising an instrument to measure the four types of thinking. As the model began to take shape, the ideas learned served to aid the development of the instrument and vice-versa.

The early ideas for building the instrument led to some twelve or fourteen separate sub-tests. The actual construction of the instrument resulted in seven sub-tests. After revision, the instrument contained six sub-tests which were tested among more than one hundred high school students in Colorado.

The instrument purports to measure student abilities in social sciencing, critical thinking, intuitive thinking, and creative thinking. What follows are selected items from the instrument organized according to each of the four types of thinking.

I. Social Sciencing --

Directions This test is divided into two parts. Both parts start with several briefly stated positions on various contemporary issues. In each part you first are to indicate whether you agree, disagree, or are undecided with the statement.

Part I below also contains an empty space after each statement. You are to list all the questions that come to your mind after reading the statement. Your questions should be as short but as thoughtful and substantial as possible. Work as quickly as possible.

1. Issue: School Integration

Statement: The attempt by the federal government and the Supreme Court of the nation to integrate our schools and neighborhoods is a crime against the people's fundamental right to choose the way of life they individually desire. The white and black people of this land prefer to be separated. This drive for an integrated society is only the pious desire of bureaucrats and intellectual liberals.

Agree ___ Disagree ___ Undecided ___ (Check one.)

Questions:

Student Responses are scored on the basis of their analytical richness. It is reasoned that the inquiring student will offer more probing and analytic questions, in terms of the following scoring criteria:

a) Are the questions based on precedence or are they functional?

b) Will the questions bring new information or just result in similar responses?

c) Do the questions pursue a particular point logically or search at random?

d) Are the questions appropriate to the statements?

e) Are the questions evaluative in nature?

A sixth criteria allows for assessing the overall quality of the questions. Each subject is scored on a scale from 0 - 5 points, with the total possible score being 30. Another dimension for scoring these questions considers the opinions of the subjects. It is hypothesized that the open, inquiring learner will probe as thoroughly those statements with which they agree as those with which they disagree.

II. Critical Thinking --

1. Directions Below are statements about observed or supposed facts. From such statements a person can draw certain conclusions. You are to read the statement and regard it as true. After each statement there are several possible conclusions or inferences listed; that is, remarks someone might make from the statement. After examining each remark, decide whether it is true (T), false (F), or that you need more information (NI). Darken your response on the answer sheet provided.

In a 1967 Harris survey, 78% of the Americans polled expressed opposition to the proposed 10% tax surcharge; only 15% favored it. With respect to other government fiscal action, the survey found that 49% of the public agreed that, "Through spending, changing interest rates and

taxation, the government can stabilize the economy." 19% disagreed. Again by a majority of about 2 1/2 to 1, the people agreed that, "Tax cuts give people more to spend thus maintaining prosperity in slow times." On the other hand, they disagreed by the same majority, 2 1/2 to 1, that "One way to control inflation is to cut down consumer spending by raising taxes."

1. The American people were against a tax increase at this time.
2. If a recession came, most Americans would be in favor of a tax cut and increased government spending.
3. A cut in the space budget two years later would have been favored by the people.
4. Americans in general have a clear understanding of how government fiscal policy works to stabilize the economy.
5. To combat inflation, Americans would prefer a cut in government spending to an increase in personal taxes.

Items of this nature are designed to measure such abilities as drawing proper inferences and conclusions (induction) and deriving logical answers (deduction). In addition, subjects are called upon to judge whether or not it is proper to draw any conclusions. This requires, when appropriate, suspending one's judgment, i.e., responding with "need more information."

2. Directions This test contains two sets of questions. Those in Part I below relate to a number of maps, charts or cartoons. These are not easy questions, so you probably won't know many answers for sure. We are more interested in how you decided on or arrived at your answer. Following each question are four ways of arriving at an answer: a) random guess means none of the choices seemed any better than the others, so your answer was a pure chance guess; b) an educated guess means after eliminating one or more choices, you took an intelligent or intuitive guess at the best answer from the remaining choices; c) just seemed right means while you didn't know the answer for a fact, one of the choices just looked correct; and d) knew for a fact means that for some reason you know this is the correct answer, or you were able to positively eliminate all but one of the choices.

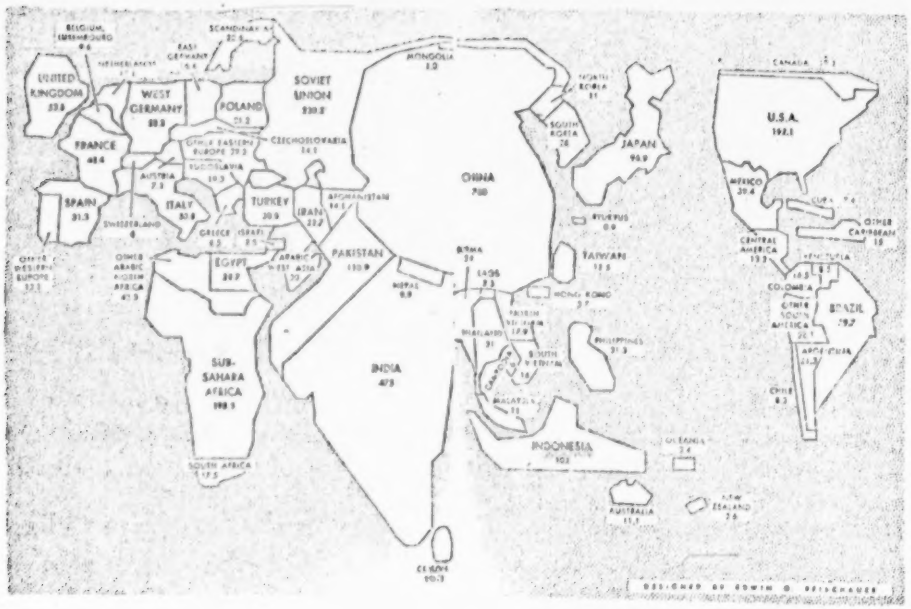
This is a special map of the world. It probably is based on the _____ of the nations.

a. actual geographic size
b. economic production
c. number of votes in the United Nations security council
d. population
e. military power

(See map on following page.)

How did you arrive at this answer?

a. random guess
b. an educated guess
c. just seemed right
d. knew for a fact



This part of the instrument is made up of a series of questions based on the interpretation of maps, cartoons and charts pertinent to the social sciences. The message conveyed by the maps, charts, or cartoons is not readily nor easily figured out by conventional analytical tools and perceptions learned in most educative experiences. The objective of the tiems, then, is to determine the student's ability to change set, to assume a new perspective, and to evoke insights in arriving at an answer.[24] The intent was to tap intuitive learning abilities. Many items did this according to a factor analysis, though in addition, several items seemed to demand critical thinking abilities. In the final analysis this type of question served to measure intuitive, critical, and creative thinking skills.

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[24]With each item, respondents are to indicate how they arrived at their answer: (a) a random guess, (b) an educated guess, (c) just seemed right, and (d) knew for a fact. It is reasoned that if such questions successfully employ the insights and intuition of the subjects, they will have arrived at the correct responses through either choices (b) or (c). "An educated guess," (b) is described for the subjects as taking an intelligent or intuitive guess at the correct answer after eliminating at least one choice. "Just seemed right," (c) means the answer was selected on the basis of one's impressions or feelings. In turn, any questions answered either through a random guess or because the answer was known would show a lack of insight or intuition. The selection "Knew for a fact" includes carefully and analytically eliminating all but one of the available choices.

III. Intuitive Thinking --

1. Directions These statements are followed by a few proposed assumptions. You are to indicate on the answer sheet whether the assumption is made or is not made by the statement. An assumption is something supposed or taken for granted. For example, if you said that you would be entering college next fall, it would be assumed or supposed or taken for granted that you had been accepted at a college, that you would be alive in the fall, that you had graduated from high school in the meantime, and so on.

Place all your answers on the answer sheet provided. (M) means the assumption was made and (NM) means it was not made. (A) means Agree, (D) means Disagree, and (U) means Undecided.

Issue: Violence

Statement: If we expect to prevent the militant violence of young radical students on the campuses, we first must curb a more subtle violence that nearly all of us practice daily in our businesses, school, government, and churches.

Agree ___ Disagree ___ Undecided _____

Proposed Assumptions

The cause of campus violence lies with the nature of our society as a whole. _____

Preventing campus violence will be impossible. _____

Campus violence is a rather complex social problem. _____

Violence of all types should be stopped abruptly and firmly. _____

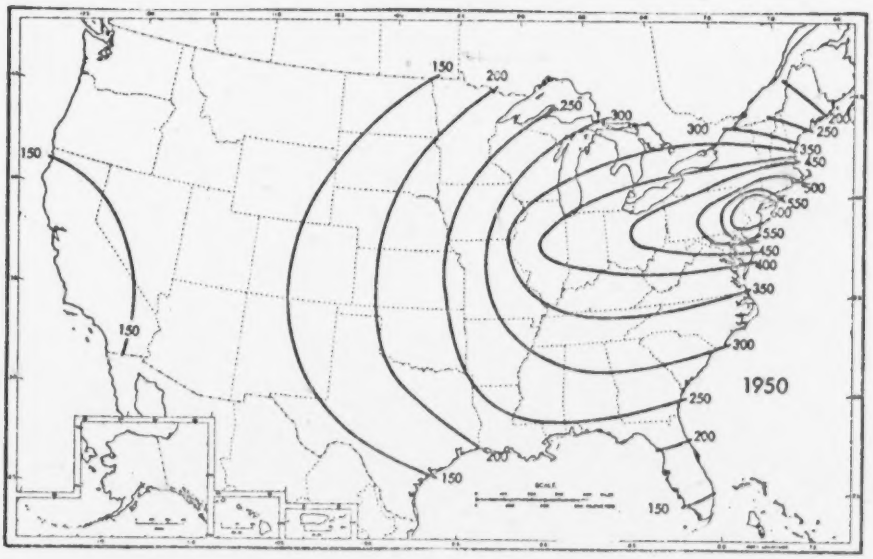
2. Directions This test contains two sets of questions. Those in Part I below relate to a number of maps, charts or cartoons. These are not easy questions, so you probably won't know many answers for sure. We are more interested in how you decided on or arrived at your answer. Following each question are four ways of arriving at an answer: a) random guess means none of the choices seemed any better than the others, so your answer was a pure chance guess; b) an educated guess means after eliminating one or more choices, you took an intelligent or intuitive guess at the best answer from the remaining choices; c) just seemed right means while you didn't know the answer for a fact, one of the choices just looked correct; and d) knew for a fact means that for some reason you know this is the correct answer, or you were able to positively eliminate all but one of the choices.

The circular configurations refer to: (See map on following page)

a. weather patterns
b. the westward movement
c. total rainfall up through 1950
d. distance from the population center of the U.S.
e. population potentials

How did you arrive at this answer?

a. random guess
b. an educated guess
c. just seemed right
d. knew for a fact



The combined spending of the federal, state and local governments in the U.S. amounts to over $350 billion. Economists generally conclude that people who benefit most from government spending are families of:

a. poverty-stricken minorities
b. middle-class blue-collar workers
c. military personnel and those in related jobs
d. the poor of any racial groups who receive welfare
e. the middle and upper-middle class white-collar or professional workers

How did you arrive at this answer?

a. random guess
b. an educated guess
c. just seemed right
d. knew for a fact

Question 1 above serves to determine a subject's ability to recognize an assumption amid controversy, i.e., one's perception and openness. The rationale for the two questions in 2 were discussed in the preceding set. The last item above is derived from the findings of social studies research. These findings were selected because they are contrary (i.e. "counterintuitive") to the public opinion or conventional wisdom of our society. Much research in the social sciences reveals that many of our traditional beliefs rest on spurious assumptions and little evidence. Over time, society's beliefs and norms eventually come to reflect the findings of science, (the research is "myth-destroying"), though by the time social beliefs catch up with social reality, research has revealed new findings. These items, then, are tentative and require persistent revision.

IV. Creative Thinking --

1. The best title for this cartoon would be:

a. two-party system
b. coffee time
c. hypocrisy
d. the age of Dr. Spock

How did you arrive at this answer?

a. random guess
b. educated guess
c. just seemed right
d. knew for a fact

"Roger and I have stayed in the Republican Party because of the children."

2. Directions For the issue stated below you are to assume the roles of the participants and carry on a dialogue between the two of them. Each role is followed by a brief description. Directly below each role, briefly but clearly list your remarks. Start the first remark with Role A. The second remark then should be a response from Role B to the first remark. The third remark then a counter response from Role A, and so on, alternating each remark from one role to the other.

Number each remark as you make it and be as convincing as possible. Your remarks should be in the first person, as if you personally were making them.

Issue: The American Way of Life -- Some Like It and Some Don't!

Role A: A Peace Corps volunteer defending the American Way of Life.

A1:

A2:

A3:

A4:

Role B: A foreigner with strong anti-American feelings.

B1:

B2:

B3:

B4:

This final item presents a role-playing situation in which the subject's task is to carry on a dialogue in the first person between the two participants or roles. (Subjects are instructed that they would have ten minutes in which to complete the role-playing dialogue.) The criteria in scoring the responses relate directly to open, creative behavior.

a) Number of independent themes;

b) Number of theme variations;

c) Novelty of themes;

d) Appropriateness of themes; and

e) Overall quality.

What Is Measurable and Unmeasurable?

If our model of inquiry is in any way an accurate approximation of the necessary aspects of inquiring, it is obvious that measuring optimum skills and attitudes is a complex task. If we can measure social sciencing as a learned process, how do we measure the degree of external or internal motivation affecting the student; and, even further, the classroom climate for inquiry set by the teacher? How do we measure the student's mind set toward any problematic situation -- degree of openmindedness? To tease out all the aspects which need to be measured requires far more sophisticated instruments than are currently available. Furthermore, one cannot expect to administer lengthy, time-consuming instruments in contemporary schools and classrooms in order to tap the effects of inquiry learning and teaching.

It is clear that much more creative effort and funds to support such work are needed to produce tests commensurate with the creativity and sophistication which went into the New Social Studies projects. Parents and patrons of the schools want to know what student outcomes result from the uses of inquiry and the New Social Studies. The projects have seldom provided these clients with any clearcut responses other than how students and teachers feel about the new materials. On the other hand, perhaps there are unmeasurable aspects of inquiry learning, or at least aspects too difficult to measure with current tests. Is it perhaps time to pour significant amounts of money into the creative process of developing tests for measuring process and attitude learning; tests which go beyond the paper/pencil versions of today?